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Feniseca tarquinius
Chrysalis (enlarged)

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ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. X. OCTOBER, 1899. No. 8.

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NOCTUIDAE OF WEBSTER, N. H.

BY CHARLES F. GOODHUE.

The town of Webster is in central New Hampshire, about sixteen miles northwest of Concord, the capital of the State. The country is hilly and well wooded, with but very little low meadowland. We have collected here every year, more or less, for twenty years, beginning early in the season and only stopping with cold weather late in the fall. We do not mean that we have collected every day or even every week, but such time as we could spare from the usual work which falls to the lot of a New Hampshire farmer. We usually have a small cyanide pot in our pocket most of the time from March until November, and by this means we get many a rare thing that would not otherwise have been found. We wish to extend our thanks to Prof. J. B. Smith in particular for the naming of many species unknown to us and for time spent in verifying a large number of our more common species; also for many other favors best known to those interested.

No species are included in the following list that have not been taken here either by us or that we know personally to

have been taken in town by others. Mr. W. F. Fiske collected two or three years at the south end of the town, and during that time he found some dozen or more species that we never met with here, for which credit will be given as they occur in the list.

THYATIRA.

Scripta Gosse. Rather rare; middle June.

EUTHYATIRA

Pudens Gn. Rare. Last of April and first of May.

PSEUDOTHYATIRA.

Cymataphoroides Gn. Not common; middle June.

We would like to ask if any one has ever bred this and the following form from the same lot of eggs, or if any one has intergrades that fill the gap between the two. We have never seen any variation in the form *expultrix*, and where any occurs in *cymataphoroides* it is away from *expultrix*, the ground color being lighter with a pinkish shade and the markings heavier and darker.

Expultrix Grt. Rather common; middle to last of June.

LEPTINA.

Doubledayi Gn. Rare; June to July.
Ophthalmica Gn. Rare; June to July.
Dormitans Gn. Common; May and June.

PANTHEA

Furcilla Pack. Rare; last of May.

DEMAS.

Flavicornis Smith. Rare; last of June.
Propinquilinea Grt. Rare; middle of July.

RAPHIA.

Frater Grt. Very rare; July.

CHARADRA.

Deridens. Very rare; June.

FERALIA.

Jocosa Gn. Not common; last of April, first of May.
Major Smith. Rare; middle of April.

MOMOPHANA.

Comstocki Grt. Very rare; April.

MOMA.

Fallax H. Sch. Uncommon; last of July.

ARSILONCHE.

Albovenosa Goeze. Not common; July.
Ab. fumosum Morr. One specimen; last of May.

ACRONYCTA.

Americana Harris. Common; June and July.
Dactylina Gt. Common; middle of July.
Leporina Linn. Rare; August.
Innotata Gn. Rather common; June and August.
Morula G. and R. Rare; middle of June.
Occidentalis G. and R. Not common; May and June.
Hasta Gn. Rare; last of June.
Radcliffei Harr. Not common; May and August.
Pruni Harr. Not common; June and July.
Brumosa Gn. Not common; May and June.
Superans Gn. Common; May and June.
Tritona Hubn. Quite rare; last of June.
Funeralis G. and R. Very rare. Have never met with this species but twice; June.
Fragilis Gn. Rare.
Vinnula Gt. Rare. Mr. Fiske has taken one specimen.
Grisea Wlk. Quite rare.
Orata Gt. Rather common; July.
Modica Wlk. Rare; last of June.
Clarescens Gn. Common; June.
Hamamelis Gn. Not common; June.
Retardata Wlk. Not common; June and July.
Luteicoma G. and R. Rather rare; last of May.
Sperata Gt. Rare; first of June.
Noctivaga Gt. Common; last of May.
Impressa Wlk. Common; May, July and August.
Oblinita S. and A. Rather common; June.
Lanceolaria Gt. Very rare; June.
Dentata Gt. Very rare; Mr. Fiske took one in 1896.

HARRISMEMNA.

Trisignata Wlk. Rare; June and July.

CERMA.

Cora Hbn. Very rare; last of June.

POLYGRAMMATE.

Hebraicum Hbn. Very rare; middle of July to middle of August.

MICROCELIA.

Diptheroides Gn. Common; middle May to last of June.
Var. *obliterata* Gt. More common than the last.

BRYOPHILA.

Lepidula Gt. Rather common; June and July.

CHYTONIX.

Palliatricula Gn. Common; May and June, again in August. Larva on elm, several on the same twig, but hardly gregarious, though they may be during the early stages.

RHYNCHAGROTIS.

Gilvipennis Gt. Rather rare; middle July.
Anchocelioides Gn. Common; July and September.
Placida Gt. Not common; July and August.
Alternata Gt. Common; last of July.

ADENPHAGROTIS.

Prasina Fabr. Not common; July.

PLATAGROTIS.

Pressa Grt. Rare; last of June.
Condita Gn. Very rare; one specimen in June.

EUERETAGROTIS

Sigmoides Gn. Rare; middle of July.
Attenta Grt. Rare; middle of July.
Perattenta Grt. Very rare; in July.

SEMIOPHORA.

Elimata Gn. Rather common; last of July and first of August.

The larva feeds on the white pine. We have found it the first of November full fed. It is pale green in color, almost the same shade as the needles, on which it feeds. There is a narrow white dorsal line and one of black edged with white on the sides. It makes a cell beneath the leaves on the top of the ground and remains in the larva state until the next June, when it changes to pupa without having fed since the November before. The moth comes out the last of July. Guenee's description of the larva and food plant do not agree with this at all, and it is just as likely to have been the larva of what Morrison and Grote describe as *dilucida* and *jannalis*, as of *elimata*.

Dilucida Morr. Rather rare; September.

This species and the one preceding have been considered as

the same, but we feel very sure they are distinct, *elimata*, showing but little variation and comes the last of July. *Dilucida* varies much and comes the first of September. Besides, the length of time taken by *elimata* in the larva state will not admit of two broods.

Tenebrifera Wlk. Two examples; last of April.

PACHNOBIA.

Hæsitans Wlk. One specimen; last of May, at light. Walker's specimen came from the Rocky mountains.

Salicarum Wlk. Common; last of April.

Fishii Grt. Not common; last of April.

AGROTIS.

Badinoides Grt. Common; last of August, first of September.

Violaris G. and R. Rare; one specimen last of August.

Ypsilon Rott. Common; May and June, September to November.

Geniculata G. and R. Not common; August.

PERIDROMA.

Occulta Linn. Rare; June.

Astricta Morr. Rare; July and August.

Saucia Hbn. One specimen; last of August.

NOCTUA.

Baja Fabr. Common; June to first of August.

Normaniana Grt. Common; July.

Bicarnea Gn. Not common; July and August.

C-nigrum Linn. Not common; June and October.

Jucunda Wlk. Rare; August.

Rubifera Grt. One example; last of July.

Phyblophora. Quite rare; middle of July.

Fennica Tausch. One specimen; middle July.

Plecta Linn. Rather common; May and July.

Collaris G. and R. Common; August.

Haruspica Grt. Common; July.

Clandestina Harr. Common; June and July.

Lubricans Gn. Common; July and August.

FELTIA.

Subgothica Harv. Common; July and August.

Jaculifera Gn. Rather rare; last of August.

Herilis Grt. Rather rare; last of August.

Venerabilis Wlk. Common; September.

Volubilis Grt. Rather common; May and June.

We take a peculiar variety of this species here, that Prof. Smith at first thought to be *æneipennis*.

POROSAGROTIS.

Vetusta Wlk. Rare; last of August.
Catenula Grt. Rare; one specimen; last of September.
Mamallonis Grt. Rare; Mr. Fiske has taken one example.
Triparis Wlk. Rare; August and September at light.

CARNEADES.

Fumalis Grt. Rare; last of May.
Velleripennis Grt. Rather rare: August.
Detersa Wlk. Common; September.
Bostoniensis Grt. Rare; August.
Messoria Harr. Common; August and September.
Pleuritica Grt. Rare; Mr. Fiske has taken one specimen.
Insulsa Wlk. Rare; last of July.
Tessellata Harr. Common; July and August.
Albipennis Grt. Rare; August.
Obeliscoides Gn. Common; July and August.
Redimacula Morr. Common; July and August.
Divergens Wlk. Rare; one specimen; June.

ANYTUS.

Privatus Wlk. Common; September.

MAMESTRA.

Nimbosa Gn. Rare; August.
Imbrifera Gn. Rare; July and August.
Purpurissata Grt. Rare; August.
Meditata Grt. Common; August and September.
Lustralis Grt. Rare; one specimen.
Detracta Wlk. Common; July.
Subjuncta G. and R. Common; July and August.
Grandis Bdv. Common; June.
Trifolii Rott. Rare; June.
Rosea Harv. Common; last of May.
Congermana Morr. Rare; May.
Rubefacta Morr. Rare; June.
Picta Harr. Common; May and September.
Cristifera Wlk. Not common; May.
Assimilis Morr. Rare; July.
Latex Gn. Common; June.

Adjuncta Bdv. Rather rare ; May and June.
Legitima Harv. Not common ; May and June.
Lilacina Harv. Not common ; July.
Goodelli Grt. Rare ; July.
Renigera Steph. Common ; July.
Olivacea Morr. Common ; August.
Lorea Gn. Common ; June.
Anguina Grt. Rare ; June.

ULOLONCHE.

Modesta Morr. Common ; May and June.

LUPERINA.

Passer Gn Not common. Mr. Fiske has taken it.

XYLOPHASIA.

Remissa Hbn. Rare ; July.
Apamiforinis Gn. Rare ; July and August.
Suffusca Mon. Rare ; last of July.
Vultuosa Grt. Rare ; last of June.
Finitima Gn. Common ; May and June.
Lateritia Hfn. Rare ; June.
Dubitans Wlk. Common ; August.
Impulsa Gn. Rare ; July.
Devastatrix Brace Common ; July.
Arctia Bdv. Common; July.
Verbascoides Gn. Common ; July.
Vulgaris G. and R. Rare; July.
Lignicolor Gn. Common ; July.

HADENA.

Fractilinea Grt. Common ; July and August.
Minuscula Morr. One specimen.
Mactata Gn. Common; July and August.
Modica Gn. Common ; August.
Diversicolor Morr. Rare ; September.

HILLIA.

Crasit H. Sch. Rare ; one specimen ; Mr. Fiske.

OLIGIA.

Festivoides Gn. Common ; June and July.
Chalcedonia Hbn. Rare ; August.

PERIGIA.

Vecors Gn. Rare ; August.

DIPTERYGIA.

Scabriscula Linn. Common; June.

HYPPA.

Xylinoides Gn. Common; June and September.

The full-grown, large, dark, brownish larva we find early in spring, often crawling over the ice and snow round low ground.

MACRONOCTUA.

Onusta Grt. Rare; July; one specimen.

ACTINOTIA

Ramosula Gn. Common; June and August.

CONSERVULA.

Anodonta Gn. Rare; Mr. Fiske has taken two examples in August, we believe.

TRIGONOPHORA.

Periculosa Gn. Common; August.

BROTOLOMIA.

Iris Gn. Common; June.

EUPLEXIA

Lucipara Linn. Common; June.

NEPHELODES.

Minians Gn. Common; September.

TRICHOLITA.

Signata Wlk. Rather rare; August.

HELOTROPHA.

Reniformis Grt. Not common; August.

HYDRŒCIA.

U-album Gn. One specimen; last of July.
Velata Wlk. Common; June and July.
Nictitans Linn. Common; July.
Purpurifascia G. and R. Rare; August.
Inquæsita G. and R. Rare; September.
Limpida Gn. Rare; September.
Nitela Gn. Rare; September and October.
Var. *Nebris* Gn. Common; September and October.

ACHATODES.

Zeæ Harr. Rare; Mr. Fiske has taken two or three.

PLATYSENTA.

Videns Gn. Rare; July.

LEUCANIA.

Pallens Linn. Common; June.
Albilinea Hbn. Common; June and August.
Phragmatidicola Gn. Common; June and September.
Insueta Gn. Common; June.
Commoides Gn. Common; June.
Unipuncta Haw. Common; June and September.

This species fairly swarmed during the fall of 1896. Overripe apples rubbed on trees were completely covered.

Pseudargyria Gn. Common; May and July; sp. nov.; one example.

Prof. Smith writes me that he has received this species from Calgary during the past summer and thinks it new.

UFEUS.

Satyricus Grt. Rare; October, November and April.

RIVULA.

Propinqualis. Common; June and July.

AMOLITA

Fessa Grt. Rare; July.

BALSA.

Malana Fitch. Common; May and June.
Tristrigella Wlk. Common; May and June.

CRAMBODES.

Talidiformis. Rare; June.

CARADRINA.

Miranda Grt. Common; June.
Meralis Morr. Rare; last of July.
Multifera Wlk. Quite common; August and September.

AMPHIPYRA.

Tragopoginis Linn. Rare; August; taken by Mr. Fiske.
Pyramidoides Gn. Common; August and September.

ORTHODES.

Crenulata Butler. Common; June and July.
Cynica Gn. Common; June and July.
Vecors Gn. Rare: July and August.

HIMELLA.

Contrahens Wlk. Common; June and July.

CROCIGRAPHA.

Normani Grt. Common; April and May.

TÆIOCAMPA.

Peredia Grt. Rare; July.

Oviduca Gn. Common; May and June.
Alia Gn. Common; April and May.
Rubrescens Wlk. Rare; April and May.
Subterminata Smith. Common; April and May.

This species shows more variation than any other found here, unless it be some of the Homoptera.

CALYMNIA.

Orina Gn. Rare; July.

ANCHOCELIS.

Digitalis Grt. One specimen; August.

PYRRHIA.

Umbra Hufn. Common; May and June.
Var. *experimens* Wlk. Rare; June.

ORTHOSIA.

Bicolorago Gn. Common; September.
Euroa G. and R. Rare; July.
Helva Grt. Common; July.
Lutosa Andrews. Not common; July.

HOMOGLÆA.

Hircina Morr. Rather rare; April.
Carnosa Grt. One specimen; September.

GLÆA.

Inulta Grt. Common; September.
Sericea Morr. Rare; September.

EPIGLÆA.

Apiata Grt. Rare. Have taken three or four in October among cranberry vines in a very wet bog.
Decliva Grt. Rare; September.

XANTHIA.

Flavago Fabr. Very rare; September.

CIRRŒDIA.

Pampina Gn. Common; August and September.

SCOLIOPTERYX

Libatrix Linn. Not common; May, July, October.

SCOPELOSOMA.

Indirecta Wlk. Common; November and April.
Pettiti Grt. Rare; April.
Tristigmata. Common; November and April.
Walkeri Grt. Rare; April.
Sidus Gn. Rare; November and April.

Morrisoni Grt. Common ; November and April.
Devia Grt. Rare ; April.

LITHOLOMIA.

Napœ Morr. Not common ; October and April.

XYLINA.

Disposita Morr. One specimen ; April.
Signosa Wlk. Common ; October and April.
Ferrealis Grt. Common ; October and April.
Innominata Smith. Common ; October and April.
Bethunei G. and R. Common ; October and April.
Contenta Grt. One specimen ; May. Prof. Smith gives the Habitat as California.
Fagina Morr. Common ; October and April.
Georgii Grt. Rare ; April.
Antennata Wlk. Common ; September and April.
Laticinerea Grt. Common ; October and April.
Grotei Riley. Rare ; October.
Unimoda Lintn. Common ; October and April.
Tepida Grt. Not common ; April.
Baileyi Grt. Not common ; October and April.
Lepida Lintn. Rare ; April.
Pexata Grt. Common ; September and April.
Thaxteri Grt. Rare ; October and April. Two species not yet determined.

MORRISONIA.

Sectilis Gn. Common ; April.
Confusa Hbn. Rare ; May.

XYLOMIGES.

Dolosa Grt. Rare ; May.

LITHOMIA.

Germana Morr. Rare ; in September.

CALOCAMPA.

Nupera Lintn. Not common ; October and April.
Cineritia Grt. Common ; October and April.
Thoracica Put. Cram. Common ; October and April.

This is as distinct a species as any of the others belonging to the genus. The species of Calocampa show but very little variation ; in fact, we have never seen a specimen that could be called a var. out of hundreds taken.

Since the above was written Prof. Smith writes me that he

finds *cineritia* and *thoracica* distinct species in genital characters.

Curvimacula Morr. Common; October and April.

CUCULLIA.

Convexipennis G. and R. Not common; June.

Postera Gn. Not common; May and June.

Speyeri Lintn. Not common; August. We can see no difference between this and *dorsalis* from Colo.

Intermedia Speyer. Common; June.

MARASMALUS.

Inficita Wlk. Rare; July.

Ventilator Grt. Rare; June.

ALETIA

Argillacea Hbn. Rare; September.

OGDOCONTA.

Cinereola Gn. Not common; August.

DEVA.

Purpurigera Wlk. Rare; middle of July.

PLUSIA.

Ærea Hbn. Not common; July.

Æreoides Grt. Not common; July and September.

Balluca Geyer. Rare; July.

Contexta Grt. Rare; June and August.

Putnami Grt. Rare; June.

Formosa Grt Rare; July.

Thyatioides Gn. Rare; September.

Precationis Gn. Common; July, August, September.

Mortuorum Gn. Rare.

Octo-scripta Grt. Rare; July and August.

Epigæa Grt. Rare; June and July.

Ampla Wlk. Rare; July

Simplex Gn. Very common; several broods.

CALPE

Canadensis Beth. Not common; July.

HELIOTHUS.

Armiger Hbn. Only two or three specimens; August.

DERRIMA.

Henrietta Grt. Two examples; last of July.

ALARIA.

Florida Gn. Common; July.

SCHINIA.

Nundina Dm. Rare; July.
Marginata Haw. Sometimes common; July and August.
Brevis Grt. One specimen; last of August.

MELAPORPHYRIA.

Immortua Grt. Rare. Mr. Fiske has taken several in June.

ACONTIA.

Erastroides Gn. Rather rare; May.
Canadefacta Hbn. Common; May and June.

CHAMYRIS.

Cerintha Tr. Common; middle of June.

PROTHYMIA.

Semipurpurea Wlk. One specimen; June.

METATHORASA.

Monetifera Gn. Common; June.

EUHERRICHIA.

Mollissima Gn. Rather rare; June and July.

LITHACODIA.

Bellicula Hbn. Common; June.

ERASTRIA.

Albidula Gn. Common; June.
Concinnimacula Gn. Not common; May.
Synochites G. and R. Common; July.
Muscosula Gn. Common; July.
Apicosa Haw. Common; August.
Carneola Gn. Common; May and June.

THALPOCHARES.

Æthria Grt. Several specimens; June and July. Florida has heretofore been given as its habitat.

DRASTERIA

Erechtea Cram. Common; May, July, September.

EUCLIDIA.

Cuspidea Hbn. Common; May and June.

SYNEDA.

Graphica Hbn. One specimen; middle of June.

MELIPOTIS.

Limbolaris Geyer. Not common; middle of June.

CATOCALA.

Nubilis Hbn. Common; June and July.

Amica Hbn. Common; July and August.
Var. *lineella* Grt. Common; July and August.
Gracilis Edw. Common; July and August.
Grynea Cram. Common; July and August.
Præclara G. and R. Common; July and August.
Micronympha Gn. Rare; August.
Similis Edw. Rare; August.
Amasia S. and A. Rare; August.
Cratægi Saund. Common; July and August.
Cerogama Gn. Common; July and August.
Var. *bunkerii* Grt. Rare; July and August.
Ultronia Hbn. Common; July and August.
Coccinata Grt. Rather rare; July and August.
Ilia Cram. Common; July and August.
Parta Gn. Very rare; last of July.
Unijuga Wlk. Rather common; August.
Briseis Edw. Rather common; last of July.
Concumbens Wlk. Common; July to September.
Relicta Wlk. Rare; August to September.
Tristis Edw. Rare; August.
Epione Dm. Rare; July.
Antinympha Hbn. Common; July to September.
Badia, Var. *Phoebe* Grt. Rare; July to September.
Subnata Grt. Rare; July to September.
Retecta Grt. Rare; August.

FAGITANA

Littera Gn. Rare; May and June; again in September.

POAPHILA.

Quadrifilaris Hbn. Rare; last of June.

PARALLELIA.

Bistriaris Hbn. Common; June and July.

AGNOMONIA

Anilis Dm. Rare; last of June. I am indebted to Mr. Fiske for a Webster specimen.

PANAPODA.

Var. *carnicosta*. Common; June and July.

EREBUS

Odora Linn. Very rare; July.

ZALE.

Horrida Hbn. Common; May and June.

PHÆOCYMA.

Lunifera Hbn. Common; May and June.

HOMOPTERA.

Edusa Dm. Rare; September.

Minerea Gn. Common; May and June. This species and *Phæocyme lunifera* vary immensely.

Cingulifera Wlk. Common; May and June.

Unilineata Grt. Not common; May and June.

Obliqua Gn. Rare; May and June.

YPSIA.

Undularis Dm. Common; May and June.

PMEUDOSTHRŒCIA.

Coracias Gn. Rather common; May and June.

HOMOPYRALIS.

Discalis Grt Not common; July.

Contracta Wlk. Common; June.

HYAMIA.

Perditalis Wlk. One specimen.

Sexpunctata Grt. Rather rare; June and July.

PANGRAPTA.

Decoralis Hbn Common; June and July.

PHALÆNOSTOTA.

Larentioïdes Grt. Rare; July and August.

PSEUDAGLOSSA.

Lubricalis Geyer. Common; July.

Roduntalis Wlk. Common; July and August.

EPIZEUXIS.

Æmula Hbn. Common; July.

Americalis Gn. Common; July.

ZANCLOGNATHA.

Lituralis Hbn. Common; June and July.

Theralis Wlk. Rather rare; July and August.

Minosalis Smith. Rather rare; August.

Lævigata Grt. Common; July.

Pedipilalis Gn. Rare; last of June.

Cruralis Gn. Rare; middle of July.

Protumnosalis Wlk. Rare; last of July.

Marcidilinea Grt. Rare; last of July
Ochreipennis Grt. Common; last of July.
One species not yet described.

HORMISA.

Absospatalis Wlk. Common; June and July.

PHILOMETRA.

Metonalis Wlk. Common; June and July.

CHYTOLITA

Morbidalis Gn. Common; June.
Petrealis Grt. Rare; June and July.

BLEPTINA.

Caradrinalis Gn. Common; June and July.

RENIA.

Sobrialis Wlk. Rare; last of July.
Factiosalis Wlk. Rare; July and August.
Flavipunctalis Geyer. Common; July and August.

HETEROGRAMMA.

Pyramusalis Wlk. Common; May and June.

PALTHIS

Angulalis Hbn. Common; June, August and September.

CAPIS.

Curvata Grt. Rather rare; June and July. Usually found in wet meadows.

BOMOLOCHA.

Manalis Wlk. Rare; June.;
Baltimoralis Gn. Common; May, June, July, August.
Bijugalis Wlk. Rare; July.
Scutellaris Grt Common; June and August.
Abalinealis Wlk. Quite rare; June and July.
Deceptalis Wlk. Quite rare; July.
Madefactalis Gn. Quite rare; July.
Sordidula Grt. Rare; last of July.

LOMANALTES.

Eductalis Wlk. Common; June.

PLATHYPENA.

Scrabra Fbr. Common. We have taken this species every month from June to November.

HYPENA

Humuli Harr. Not common; April, May and July.

A NEW SPECIES OF PULVINARIA.

By R. S. Lull, M. S.

Pulvinaria phaiæ, n. sp.

A new but very typical species of *Pulvinaria* was discovered in the plant house of the Massachusetts Agricultural College by Mr. R. A Cooley in April, 1897. The species was quite abundantly scattered over the under side of the leaves of a species of orchid, *Phaius maculatus* and of another *Phaius* somewhat similar, but undetermined. As all stages were represented, good opportunity was offered for some biological studies in this interesting genus.

The FEMALE, just before gestation, is oval in shape, measuring about 3mm. in length by 1.75mm. in breadth, though the size varies evidently with the abundance or scarcity of nourishment. In color the creature is in general a light, yellowish green, varying somewhat in different individuals, so as to approach very nearly to the general color of the leaf, rendering it nearly invisible.

The antennæ, curiously enough, show at least two distinct types with regard to the relative lengths of the various segments, and there are minor variations as well. The two types, A and B, which are both figured, are found about equally distributed among individuals, even on the same leaf. This fact leads me to wonder if too great stress may not have been laid on this much used specific character. A series of about twenty-five individuals was carefully examined with regard to the antennæ as well as other features. In type A segments 3 and 8 are equal and longest; next, segment 2; then, 4; next, 5; then, 6; and finally 7, the shortest of all being only one-third the length of segment 8. The apparent length of the basal segment varies so decidedly, depending upon the point of view, that I have thought it best to neglect it. Formula (38) 2 (4) 5 (6) 7. The basal segment bears three or four hairs, segment 2 bears two rather long hairs; segment 3, one, somewhat shorter; segment 4, none; segment 5, two long ones; 6, one: 7, one; while segment 8 bears seven or eight, one, apparently the longest, being terminal in position.

Type B shows the following relative length of segments: 8 is the longest; 5 almost equalling it; next 3, then 2; 4, 6 and 7 being subequal and shortest, seven being ⅔ the length of 8. Formula (85) 3, 2 (467). The hairs born by the various segments are approximately as in Type A. A series of four long and three short hairs, arranged symmetrically across the head, extends from the base of one antenna to that of the other. I have never seen them mentioned in any description, though my own observations prove to me that they do occur in other species, though varying in number and arrangement. These inter-antennal hairs are shown in the nearly mature female figured in figure 3.

The legs (see fig. 10) are normal, somewhat stout in proportion to

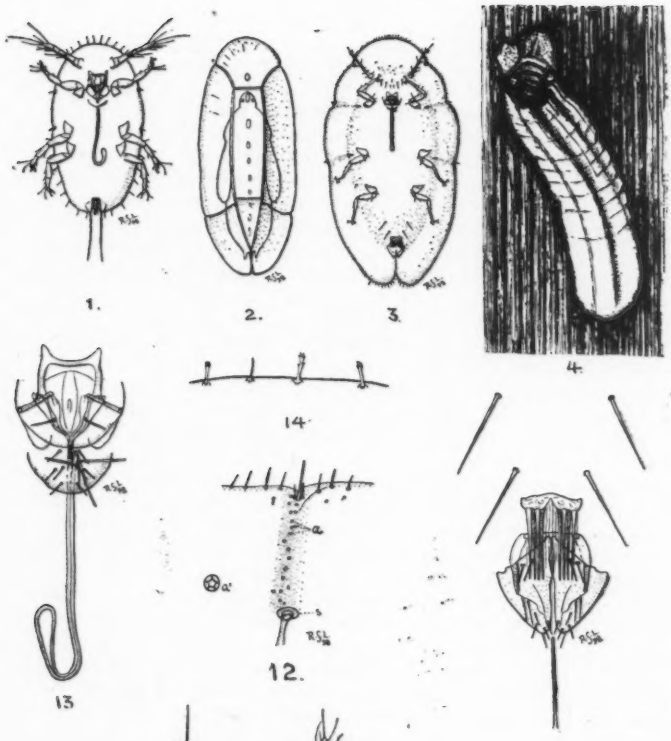
their length, tibia about the length of the femur; tarsus about two-thirds the length of the tibia. The tarsal claw is stout, quite strongly curved, and the tarsal digitules are slender, slightly more than one-half the length of the tarsus and with oblique knobs at the tip. The digitules of the claw extend beyond the tip of the claw, the knob of one being set very obliquely, that of the other straight. There is a long hair at the apex of the coxa; a long sensory hair at apex of trochanter and another shorter one near the base. The femur bears three or more short hairs and the tibia three.

The mouth structure is as follows: The mentum is monomerous, almost semi-circular in outline, and bears eight short hairs, only discernible under a high power. The rostral filaments are very long, the loop when entirely withdrawn reaching well into the abdomen. (See fig. 13.)

The anogenital structure (see fig. 11) presents quite a degree of complexity. The ring itself is difficult to see as such, as its plane is vertical in position, so that most preparations, as the one figured show only its edge. The ring bears eight tapering hairs, which are not analogous to the ordinary clothing or sensory hairs found elsewhere, but seem rather to be the chitinous stiffenings to a sort of membranous tube arising from the anogenital ring and extending to the middle, nearly, of the dorsal lobes. Putnam (Proc. Davenport Acad. Sci., Vol. II, p. 293 on) claims that this tube is waxy; but if so would it have withstood the treatment of boiling in potash and glycerine, which the specimen underwent during preparation? Every other bit of waxy secretion disappeared entirely during the process. His idea that the tube functions as an egg guide is undoubtedly correct. The dorsal lobes are triangular, the lateral angles forming almost a right angle, and each dorsal lobe bears about nine hairs of the sensory variety, as shown in the figure. A feature which I have never seen mentioned, though possibly occurring in other species, is the presence of four large hairs on the abdomen (see figs. 3 and 11), two on either side, a little in front of the anogenital apparatus. The two anterior ones are farther apart than the two posterior.

The marginal spines under very high power show, on the part of some at least, a peculiar branched condition at the tip (see fig 14). Those at the stigmatal depressions are in threes, one long, flanked by two short hairs. S. The stigmata themselves are situated some distance in from the margin of the scale, near the coxa of the fore and middle legs, with a sort of groove leading outward to the beforementioned spines. This group is filled with a conspicuous line of dense, white cottony wax secreted by glands, whose openings lie scattered in an irregular row beneath it (see fig 12).

The ovisac is white, elongated, 8mm. long by 25mm. broad, with sides nearly parallel, conspicuously fluted and with slight tranverse markings, apparently impressions of the hinder end of the body.



PULVINARIA PHALÆ LULL.

The material of which the ovisac is composed is very close grained and felty, but so readily adhesive to any object that the slightest touch destroys the characteristic appearance of the structure. At the time of the formation of the ovisac a sparse covering of flocculent material makes its appearance on the dorsal surface of the scale, similar to that of certain other species, notably that described by Westwood (Gard. Chron., 1870, page 308), whose description of the ovisac also corresponds more or less closely to that of the present species; but as no technical description of the insect itself is added, there is no proof of the identity of *Pulvinaria phaiæ* and *P. floccifera*.

The EGG is minute, regularly oval, pale yellow in color, with no discernible sculpturings or markings thereupon. The eggs are numerous, but the number, together with the size of the ovisac, varies apparently with the abundance or scarcity of food.

The newly hatched LARVA is active, pale yellow in color, in form an elongated oval with comparatively few marginal spines. The anogenital plates reach quite to the margin of the insect and the anal setæ are strong and nearly one-third the length of the insect. All appendages are proportionately far larger than in the adult (see fig. 1). Antennæ are of six segments. Segment 3 is the longest, though about equal to 6; segments 4 and 5 are equal and next in length; segments 1 and 2 equal and shortest. Formula 3, 6 (4, 5) 1, 2. Three hairs are born on segment 3; the 4th bears one rather long hair, while 6 bears seven, of which the terminal one and one other are very long.

The legs are long and stout. The tibia is longer than the tarsus, which is, as Mr. Maskell says (Trans Royal Society, S. Australia, XI, p. 103), "an exceptional character in larvæ." He cites it as being true of *P.*

Flavicans, mask, larva. Digitules are similar to those of the adult. The rostral loop is long, being over one-half the entire length of the insect.

The MALE test is 2.5 mm. long by 1 mm. broad, elongated oval in outline, with two notches, one on each side, in the anterior one-eighth; two similar notches lie about two-sevenths of the distance from the posterior end, and one deep anal notch or cleft lies terminally in the median line. Color hyaline, the semi-transparent pupa showing through the test with greater or less distinctness. A row of ten oval, lustrous, pellucid markings lie along the medium line of the test. Two main carinæ, arising from the anterior marginal notches, approach to within about .3 mm. of each other, then run nearly parallel until nearly opposite the posterior lateral notches whence they converge to form a single line ending in the posterior median notch. Two transverse carinæ connect the main ones, one about .5 mm. from the anterior end and one about .75 mm. from the posterior end. Other carinæ describe reversed curves connecting

each a posterior lateral notch with the main carina of its own side just behind the posterior transverse keel. (See fig. 2.)

The carinæ are lustrous in appearance like the oval markings before mentioned.

The male pupa may be seen within the test described. It is about two-thirds the length of the test. The head with its two dorsal eyes is distinctly visible. The wing pads are already conspicuous and the two tubercles which later give rise to the anal filaments are also seen flanking the partially developed stylus.

The MALE of this species was rather plentiful in May, 1897, when the form was first discovered; but, while male tests have been found since, no perfect males have been secured since. A drawing was made, at the time mentioned, of a living male; but it was done without a *camera lucida*, and, as the creature was somewhat active, the result was unsatisfactory. Mounted specimens, both in glycerine and Canada balsam, became so distorted as to make either a drawing or an adequate description well-nigh impossible. Thus it was thought best to publish a meagre description of the sex rather than await the reappearance of so evanescent a creature as a male Pulvinarian.

The male is a delicate two-winged fly, about 1.5 mm. long and about 3 mm. in alar expanse; breadth of thorax about .5 mm. The anal setæ were nearly equal to the trunk in length, though, as these are merely waxy secretions and are continuously growing, the length undoubtedly varies in different individuals. The color was the terneral color, that of the newly emerged individual, which changes somewhat as the insect flies about. General ground color pale brown, darker on the thorax, with a dark brown band crossing the mesothorax at the level of the wings. The legs and antennæ pale yellow; wings hyaline, with a rose-colored basal portion; anal filaments white. The head is free, rounded, but with the front produced into an obtuse angle. The dorsal and ventral eyes are conspicuous, equal in size and very dark brown in color; the ocelli are not discernible in the mounted specimen. The antennæ are long, slender and pilous, and of ten segments (See fig. 9.) Segment 4 is much the longest; segments 6, 5 and 10 subequal and next in size, being about three-fifths the length of segment 4. Next in length is segment 7; next 8; next 1 and 3, nearly equal; next segment 9; while 2, nearly spherical in shape, is the shortest of all. The antennæ in general compare closely with those of the male *P. innumerabilis* (see above), except that no knobbed hairs were observed on the distal segment. In fact, except for some characters *not* observed in my species, and hence possibly overlooked, the whole description of *P. innumerabilis* ♂ tallies fairly well with that under consideration, thus hinting that the true distinguishing specific characters are yet to be found. This, however, is not true of the female, nor yet of the male test.

As to the distribution: The insect was found on no other

plants than the two species of *Phaius* mentioned. Thus there is reason to believe that it was imported with one or the other of the original plants, which are natives of Japan, and this would render the insect palæarctic in origin; but, as is sometimes the case with plant house-insects, the subject is clouded in considerable obscurity.

The plants seem able to thrive even when infested with considerable numbers of the scale, though one plant has died presumably as a result of infestation, though scales of another sort, which were present, doubtless aided in bringing about the result.

One curious fact was noted, that while the female was as a rule sedentary, at the same time up to the period of gestation she was capable of free locomotion and was very apt to seek for pastures new, especially if feeding was poor; not always, however, with very great success, as, for instance, when an infested leaf was pinned up against the window casing numbers of the insects left the leaf and actually made their ovisacs on the wood work itself, sometimes at a distance of several inches from the leaf. The ovisacs were appreciably smaller than where the insects remained at rest, however, showing that the secreting power of the glands is limited where fresh food is not obtainable. I further noticed that as the ovisac grew in size the insect was pushed forward, the ovisac itself remaining stationary.

Natural enemies: I bred a parasite from the scale, which Dr. Howard kindly identified as *Coccophagus lecanii* Fitch, a form which infests many of our local *Coccidæ*.

An artificial remedy was discovered to be very effectual through an oversight. The student in charge of the insectary green-houses wherein the insect was being bred was instructed to fumigate the houses with tobacco smoke, which he did without removing the *Phaius* plants, to the utter destruction of every specimen of the scale.

DESCRIPTION OF PLATE

Figure 1, Newly hatched larva.
Figure 2, Male pupa within test.
Figure 3. Female, nearly mature.
Figure 4, Female with fully formed ovisac.
Figure 7, Female antenna, type "A."
Figure 8, Female antenna, type "B."
Figure 9, Male antenna.
Figure 10, Fore leg of female, 10a, claw enlarged
Figure 11, Anogenital structure of female.
Figure 12, Stigma and stigmatal glands and spines, "a" equals "a" enlarged.
Figure 13, Female mouth.
14, Margin of female scale showing branched spines.

CREMASTOCHILUS LEUCOSTICTUS BURM—MALE AND FEMALE.

By Chas. Liebeck, Philadelphia, Pa.

[See Plate VI, Figs. 13 and 14.]

Two specimens, male and female, of this very rare species were received by courtesy of R. J. Weith, of Elkhart, Ind., that "were taken in Clarendon county, South Carolina, about 60 miles from Charleston, near the Santee River, sometime between the 1 and 9 of August, 1896. The specimens were flying together in a broom-grass clearing near a swamp."

The male shows the most curious departure from the general appearance of the other species of *Cremastochilus*, the upper surface of thorax and elytron being covered with a dense pubescence, the base of head, two-thirds of thorax bordering side margins, and entire margin on upper surface of elytron being yellowish white (as shown in plate) the pubescence of the remaining portions being a dense, velvety black, though not so heavy as the whitish.

The female is entirely devoid of pubescence, black, shining.

The first three ventral segments of male are strongly, longitudinally depressed at middle; the anterior tibiæ, though bidentate externally as in the female, the upper tooth is inconspicuous, the apical much recurved, not so long nor acute as in the female; the apex strongly notched at middle, inner edge of emargination resulting in short, acute tooth; inner, apical edge of tibiæ being abruptly incurved from midway between upper and apical teeth.

In the female the apex is obliquely straight to point of apical tooth, though very feebly sinuate.

The punctuation of head, thorax and pygidium of male is sparser and finer than in the female, that of scutellum much more numerous and finer, the elytron being about equal in both sexes.

It seems rather surprising that no record is given of the male to date, Burmeister, Handb. III. p. 677, 1842, basing his description on a female specimen, and Dr. Horn, Proc. Am. Philosophical Society, 1879, Vol. xviii, redescribing the species from a unique female taken in Maryland by Mr. Ulke.

LIST OF ACULEATE HYMENOPTERA,

Taken at Fedor, Lee County, Tex. By G. BIRKMAN.

By far the greater number of the following species were determined by Mr. William J. Fox.

Mutillidæ.—*Mutilla montivaga, tisiphone, californica, occidentalis, comanche, orcus, gorgon, connectens, brazoria, scævola, waco, venifica, mollissima, vesta, simillima, caneo, 4-guttata, 4-guttata* var. *electra, cypris, mutata, balteola, præclara, dubitata, grandiceps, pygmæa, euterpe, auripilis, pensylvanica, castor, fulvohirta, zelaya, fenestrata, canella, macra, bexar, promethea, hexagona.* **Scoliidæ.**—*Tiphia inornata; Paratiphia albilabris; Myzine fuliginosa, hamata, dubiosa, 6-cincta, fumipennis; Scolia nobilitata; Elis plumipes, 4-maculata.* **Sapygidæ.**—*Sapyga centrata.* **Pompilidæ.**—*Pompilus philadelphicus, maurus, tenebrosus, fuscipennis, tropicus, interruptus, ferrugineus, marginatus, argenteus, cylindricus, cinctipes, algidus, americanus; Priocnemis flamipennis, fulvicornis, marginatus; Agenia belfragei, mellipes, accepta; Notocyphus dorsalis; Parapompilus vicinus; Aporus fasciatus; Ceropales bipunctata, fulvipes; Mygnimia ustulata; Pepsis formosa, luteicornis.* **Sphegidæ.**—*Sphex ichneumonea, pennsylvanicus, texana, lauta, bel, fragei, tibialis, atrata, thormæ, abdominalis; Pelopoeus cementarius; Chalybion cæruleum, texanum; Ammophila grossa, gryphus, pictipennis, vulgaris; Chlorion cærnleum.* **Larridæ.**—*Tachytes aurulentus, elongatus, validus, breviventris, rufofasciatus, fulviventris, texanus, pepticus, abdominalis, obscurus, sericatus; Tachysphex punctifrons, terminata, montana, fusus; Notogonia argentata; Ancistromma consimilis.* **Bembicidæ.**—*Sphecius speciosus, Megastizus brevipennis, Bembecinus neglectus, Stizus unicinctus, Bembex nubilipennis, texana; Monedula carolina, pictifrous, ventralis, speciosa; Bembidula fodiens, ventralis, capnoptera, insidiatrix.* **Nyssonidæ.**—*Gorytes moneduloides, phaleratus, phaleratus* var. *rufoluteus, propinquus; Hoplisus bollii, Alyson texanus, Nysson texanus.* **Philanthidæ.**—*Philanthus ventilabris, punctatus, dubiis, politus; Cerceris mimica, gnara, fumipennis, venator, dufourii, bicornuta, fasciola, clypeata, compacta, kennicottii, ruficnoda, finitima; Eucerceris.* **Mimesidæ.**—*Psen tibialis.* **Crabronidæ.**—*Trypoxylon albitarse, politum, clavatum, bidentatum, texense, fastigium; Crabro 10-maculatus, rufifemur, scaber, cognatus, flaviclypeus, propinquus; Entomognathus texanus* var.; *Oxybelus cornutus, subulatus, 4-notatus* var. *montanus, packardi* var. *texana, emarginatus.* **Eumenidæ.**—*Zethus spinosus; Eumenes fraternus, americanus (belfragei), bollii, Monobia quadridens; Odynerus dorsalis, fusus, clusinus, hidalgi, ductus, evectus, annulatus, manifestus, arvensis, foraminatus, campestris, firmus; anormis, fundatus, colon, fulvipes, austrinus, pedestris, taos, capra, tigris, delicatus* var., *unifasciatus, quadrisectus, Pterochilus 5 fasciatus.* **Vespidæ.**—*Polistes incertus, minor, annularis, perplexus, variatus, americanus, texanus, fuscatus* det Schulth; *Vespa carolina, germanica, cuneata.* **Andremidæ** and **Apidæ.**— *Colletes americanus, compactus?* det. Friese; *Prosopis varifrons, affinis; Sphecodes* (near *mandibularis*); *Halictus tegularis, coactus, ligatus, pectoralis, bardus, armaticeps* det. Friese; *Augochlora pura, sumptuosa, humeralis; Agapostemon nigricornis, texana, æruginosa; Andrena brunniventris, belfragei, miserabilis? Protandrena* sp. det. Friese; *Nomia nortonii, foxii, birkmannii* Friese MSS.; *Calliopsis ornatipes, rhodophilus* det. Friese,

abdominalis; Perdita, 4 to 5 undet. sp.; *Nomada texana, belfragei, bisignata, electra? Epeolus occidentalis, texanus, remigatus; Epeolus lunatus, scutellaris; Phileremus*, sp.; *Melecta interrupta; Stelis costalis; Cœlioxys insita, texana; Osmia texana, bucconis?* det. Friese, *chalybea*, det. Friese, *subfasciata; Heriades variolosns, denticulatus* det. Friese; *Andronicus*, sp.; *Alcidamea*, sp.; *Anthidium zebratum, concinnum; Lithurgus gibbosus, compressus; Megachile facunda, pruinosa, optiva, albitarsis, montivaga, latimana, fortis, exilis, pollicaris, pugnata, frigida* det. Friese, *inimica, brevis, perbrevis, comata; Ceratina strenua* det. Friese; *Mellissodes confusa* det. Friese, *menuacha, suffusa fimbriata, rustica* det. Friese, *afflicta, intorta, texana, intermedia? obliqua*, det. Friese, *comanche, atripes; Synhalonia albata; Synhalonia honesta; Podalirius smithii* det. Friese; *Anthophora texana, montana, abrupta; Xylocopa micans, texana, virginica; Centris birkmanii* Friese; *Apithus variabilis, elatus; Bombus pennsylvanicus, scutellaris, americana.* **Addendum.**—*Exomalopsis*, sp. det. Friese.

———o———

GEOGRAPHICAL DISTRIBUTION OF LIMENITIS WELL ILLUSTRATED.—In the Geographical and Geological Exhibition now being held at the new Science Museum Building in Springfield, Mass., is a curious map, the work of Miss Anna Dimmock, a grammar school girl of that city. This map illustrates the distribution of the two butterflies *Limenitis arthemis* and *L. ursula* in relation to their intermediate form *L. proserpina*. On the map of the United States and British North America, which is perhaps 10x18 inches in size, the area from which *L. arthemis* is known is indicated by oblique blue shading, and the area occupied by *L. ursula* by yellow shading in the same direction. Where both species occur the yellow lines interlace with the blue ones, thus giving a mild greenish shade to that portion of the map. Where *L. proserpina* has been found is indicated by green shading lines at right angles to the other shading-lines. At one side of the map hangs a box with four specimens of *Limenitis*, grading from *L. arthemis* through *L. proserpina* to *L. ursula*.

At the other side of the map, which is entitled "A Study in Geographical Distribution," hangs a sheet with brief explanation of the facts concerning these butterflies, and a short statement of Mr Scudder's opinion that *L. proserpina* is a hybrid form of *L. arthemis* and *L. ursula*, and Mr. Edward's reasons for the view that *L. proserpina* is a variety of *L. arthemis*. Miss Dimmock has not only indicated the distribution of the species as given in Scudder's "Butterflies of the Eastern United States," published in 1888, but has carefully compiled, from the various entomological periodicals, later recorded captures, so that her map is a graphic presentation of the hybrid-variety question in regard to *L. proserpina*, brought down to 1899. It is unnecessary to add that this map was not a part of its author's school work in natural science.

FREDERIC KNAB, Chicopee, Mass., June 30, 1899.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfullyreceive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer for each number three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., OCTOBER, 1899.

EDITORIAL.

"HARRISBURG, PA., August 17.—Senator "Jim" Mitchell's son-in-law, Benjamin F. McCartney, has landed in the place of Economic Zoologist, and will take his place on September 1st. McCartney's qualifications for this scientific position consist in his having clerked in Senator Mitchell's grocery store in Jefferson county and having known coon pelts when the natives traded them for brown sugar."

The above is a clipping from *The Philadelphia Record*, and as far as we know is literally true and gives a good idea of the status of scientific work in Pennsylvania as far as public positions are concerned. This State appears to have the distinction of being politically the most corrupt of any in the Union. The Economic Zoologist of Pennsylvania gets a salary of $2,500 and has an assistant at $1,500. It can be safely said that the return the people get from this department (Economic Zoology) may be computed in copper pennies. The damage done, except by insects, is immaterial, and an economic zoologist who only knows coon skins could hardly be expected to advise farmers and others in regard to injurious insects.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

THE Directory of American Entomologists is progressing rapidly, but there are still a number of persons who have thus far failed to send in their names, etc. We feel that those who carelessly neglect to send their names will greatly regret it when the Directory appears. Persons desiring to insert advertisements on the cover sheets will communicate with Mr. E. T. Cresson, Box 248, Philadelphia.

ON A REMARKABLE USE OF ANTS IN ASIA MINOR. Under this heading we quoted, in the NEWS for October, 1897, page 200-1, an account given by R. M. Middleton of ants being used to hold together the edges of incised wounds by means of their strongly hooked and sharp mandibles. In the recently published proceedings of the Linnean Society of London, 110th session, page 2, the name of the species in question is given by Mr. Middleton as *Cataglyphus viatica* Fabr.

DR. HERMAN STRECKER has recommenced scientific literary work and has recently published additions to his well known Lepidoptera Rhopaloceres and Heteroceres. Supplement No. 2, was noticed in the September literature of the NEWS. This paper contains descriptions of fifty new species of moths and butterflies. Of course such things as the insects described must be made known to science, but the work would be far more valuable if the species were figured as in the doctor's previous numbers of the work. He is at present engaged in writing a descriptive list of the types in his collection, and also has ready for the press an index to the species mentioned in Kirby's Catalogue of Lepidoptera Heterocera Vol. 1. These publications may be had from the author.

A VERY RARE INSECT FOUND IN BOONE COUNTY YESTERDAY.—A very rare insect was found in Boone county yesterday, says the Belvidere, Ill., *Northwesterner*, August 17, 1899. It was found out in the country and presented to C. Fred Lewis, of this city, who in turn presented it to Superintendent A. J. Snyder, of the North Schools, who will add it to his large collection of insects.

The little pink creature is certainly an oddity. It is an Albino that out-Albinos anything often seen. Superintendent Snyder says he only knows of two other specimens of this kind being found in this country. One was found by him at Evanston, this State, and the other was captured at Wood's Holl, Mass., the great biological center.

Entomological Literature.

COMPILED BY P. P. CALVERT.

Under the above head it is intended to mention papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South). Articles irrelevant to American entomology will not be noted. Contributions to the anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded. The numbers in HEAVY-FACED TYPE refer to the journals, as numbered in the following list, in which the papers are published; * denotes that the paper in question contains descriptions of new North American forms. Titles of all articles in foreign languages are translated into English; usually such articles are written in the same language as the title of the journal containing them, but when such articles are in other languages than English, French, German or Italian, this fact is indicated in brackets.

4. The Canadian Entomologist, London, Ont., '99.—**5.** Psyche, Cambridge, Mass., September, '99.—**8.** The Entomologist's Monthly Magazine, London, '99.—**9.** The Entomologist, London, '99.—**11.** The Annals and Magazine of Natural History, London, August, '99.—**14.** Proceedings of the Zoological Society of London, '99, part ii, August 1.—**21.** The Entomologist's Record, London, August 1, '99.—**22.** Zoologischer Anzeiger, Leipsic, '99.—**32** Bulletins du Muséum d'Histoire Naturelle, Paris, '99.—**37.** Le Naturaliste Canadien, Chicoutimi, Quebec, '99.—**38.** Wiener Entomologische Zeitung, xviii, 7, July 31, '99.—**42.** Journal of the Linnean Society, Zoology, London, No. 172 Dec. 15, '98, No. 173 April 1, '99.—**60 a.** Anales, **60 c.** Comunicaciones, Museo Nacional de Buenos Aires.—**84** Insekten Börse, Leipsic, '99.—**87.** Revue Scientifique, Paris, '99.—**89.** Zoologische Jahrbücher, Abtheilung für Systematik, xii, 3, Jena, August 12, '99.

The General Subject.—Anon. W. M. Wheeler's anemotropism in insects, **87**, August 12.—Berg, C. Substitutions of generic names, iii, **60 c**, i, 3, May, '99.—Carret, A. M. F. Guillebeau and his entomological works (cont.), L'Echange Revue Linneenne Lyon, August, '99.—Distant, W. L. Biological suggestions: mimicry (cont.), Zoologist, London, July 15, August 15, '99.—Frings, C. Experiments with low temperature in 1898, Societas Entomologica, Zürich-Hottingen, August 1, '99.—Harrington, W. H. Extra limital insects found at Ottawa, Ottawa Naturalist, August, '99.—Heymons, R. The morphological structure of the insect abdomen: a critical review of the most important results of research in anatomical and embryological fields, Zoologisches Centralblatt, Leipsic, August 1, '99.—[Huard, V.] Tragi-comic entomology in our large newspapers, **37**, July.—Karl, P. C. A. On the fauna of the caves of the Moravian Devonian Limestone, **22**, July 24, 31.—Poulton, E. B. Natural selection the cause of mimetic resemblance and common warning colors, 5 pls., **42**, 172.—Robertson, C. Flowers and insects, xix, Botanical Gazette, xxviii, 1. Chicago, August, '99.—[Scudder, S. H.] Manuscript notes by the late T. W. Harris on Say's insects and papers, i, **5**.—Thomson, A. Report on the insect-house for 1898 [Zoological Gardens, London], **14**.—Thon, C. Some observations on the fauna which dwells in frogs' spawn, Verhandlungen, Zoologisch-botanischen Gesellschaft in Wien, xlix, 7, August 4, '99.

Economic Entomology.—Anon. A new case of contagion by an insect [*Melanolestes picipes*], **87**, August 26.—Bastianelli, G., Bignami, A. and Grassi, B. How one takes malarial fever. Transmission of malaria by definite insects, Rearing of the malarial parasite of man in *Anopheles claviger* Fabr. (syn, *A maculipennis* Meig.). Further researches on the life-history of the human malarial parasite in the body of the mosquito [four memoirs translated from Italian originals into German], Moleschotts' Untersuchungen zur Naturlehre des Menschen und der Thiere, xvi, 5 and 6, Giessen, '99.—Cockerell, T. D. A. Coccid pests on sugar cane, Bulletin of Miscellaneous Information, Nos. 145-146, Royal Gardens, Kew, Jan.-Feb., '99. Rec'd August 5. —Davis, T. W. The mosquito as a vehicle of malaria, New York Medical Journal, August 19, '99.—Fletcher, J. Report of the entomologist and botanist. figs., Canada Department of Agriculture, Central Experimental Farm, Annual Report for 1898 Ottawa, '99.—Fuller, C. Insect friends and foes: lady birds versus bugs. figs., Agricultural Journal, Cape Town, July 20, '99.—Green, E. E. Observations on *Aspidiotus lataniæ* Sign., figs., **8**, August.—Kirkland, A. H. Eleventh annual meeting of the Association of Economic Entomologists. Columbus, Ohio, August 18 and 19, 1899, Science, New York, Sept. 8, '99.—Lesne, P. Extracts from a report addressed by M. Wisser, inspector of plantations of the Nieuwe Afrikaansche Handels Vennootschap, to M. Ch. Chalot, Director of the experimental garden at Libreville, on various insects injurious to the coffee-trees in the region of Loango and in that of the Kouilou, figs., **32**, No. 3.—Pearson, L. and Warren, B. H. Diseases and Enemies of Poultry. Published by Authority of the Legislature [of Pennsylvania]. Clarence M. Busch, State Printer of Pennsylvania, 1897.—Plimmer, H. G., and Bradford, J. R. A preliminary note on the morphology and distribution of the organism found in the tsetse fly disease. Proceedings, Royal Society, No. 418. London, August 31, '99.—Reh, L. News of the American scale insects. Naturwissenschaftliche Wochenschrift, Berlin, August 13, '99.—Wilcox, E. V. Abstracts of recent publications, Experiment Station Record, x, 11, Washington, '99.

Arachnida.—Behr, H. H. and Marlatt, C. L. A Californian tick, **4**, August.—Pickard-Cambridge, F. O. On some spiders from Chili and Peru collected by Dr. Plate of Berlin, 1 pl., **42**, 173. Pickard-Cambridge, O. On some new species of exotic Araneidea. 2 pls, **14**; On some arctic spiders collected during the Jackson-Harmsworth Polar Expedition to the Franz Joseph Archipelago, 1 pl., **42**, 172.—Rowbotham, F. J., Maternal devotion of spiders, Nature, London, August 31, '99.—Seurat, L. G. Biological Relations between *Epeira labyrinthea* McCook and *Pimpla mexicana* Cameron, Memorias y Revista, Sociedad Cientifica "Antonio Alzate," xii, 7-8, Mexico, '99.

Myriopoda.—Attems, G. New facts on palæarctic Myriapods, 3 pls, **89**.—Verhœff, C. Contributions to knowledge of palæarctic Myriopods, viii. On the comparative morphology, phylogeny and classification of groups and of species of the Chordeumidæ, figs., 5 pls., Archiv für Naturgeschichte, lxv, i, 2, Berlin, June, '99.

Collembola.—Folsom, J. W. The anatomy and physiology of the mouth-parts of the Collembolan *Orchesella cincta* L., 4 pls. Bulletin, Museum of Comparative Zoology, xxxv, 2, Cambridge, Mass., July, '99.—Lubbock, J. On some Spitzbergen Collembola, **42**, 172.

Orthoptera.—Bordage, E. Tarsal regeneration and regeneration of the joints of the anterior two pairs of limbs in saltatory Orthoptera, Comptes Rendus, l'Academie des Sciences, Paris, July 17, '99; The regeneration of limbs in the Mantidæ, and the constant occurrence of a tetramerous tarsus in limbs regenerated after self-mutilation among the Orthoptera pentamera [translated from the French], II.—Scudder, S. H. Short studies of North American Tryxaliinæ,* Proceedings, American Academy of Arts and Sciences, xxxv, 2, Boston, August, '99.

Neuroptera.—McLachlan, R. Notes on certain palæarctic, species of the genus *Hemerobius*, No. 4, figs., **8**, August; On the voluntary submergence of the female of *Enallagma cyathigerum*, **8**, Sept.—Needham, J. G. *Ophiogomphus*, **4**, Sept.—Tutt, J. W. Migration and dispersal of insects: Odonata, **21**.

Hemiptera.—Baker, C. F. On *Alebra* and related genera, **5**.—Cockerell, T. D. A. A new *Dactylopius* (fam. Coccidæ) from Arizona, **4**, Sept.—Distant, W. L. Some apparently undescribed Neotropical Homoptera,* II.—Hueber, T. Synopsis of the German "blindwanzen" (Hemiptera heteroptera, fam. Capsidæ), pt. iv. Jahreshefte, Vereins für vaterlandische Naturkunde in Württemberg, lv, Stuttgart, '99.—King, G. B. Contributions to the knowledge of Massachusetts Coccidæ, iii, iv, **4**, Aug., Sept.—Kirkaldy, G. W. Notes on aquatic Rhynchota,* **9**, August; A Guide to the study of British Rhynchota, **9**, August; On the nomenclature of the Rhynchota, i, **9**, Sept.—Marlatt, C. L. *Aspidiotus convexus*, Comst., a correction, **4**, August.—Martin, J. Catalogue of the Hemiptera Platyspinidæ of the collections of the Museum of Natural History of Paris, **32**, No. 5.—Montandon, A. L. Hemiptera-Heteroptera: three new species of the genus *Zaitha* Am. et Serv., from the collections of the Museum of Paris, **32**, No. 4.

Coleoptera.—Berg, C. Coleoptera of Terra del Fuego collected by Sr. Carlos Backhausen [in Spanish], **60 c**, i, 3, May, '99.—de Bruyne, C. The follicle cell of the testis of *Hydrophilus piceus*, figs, Erganzungsheft, Anatomischer Anzeiger, xvi, Jena, July 29, '99.—Dierckx, Fr. The pygidian glands of Staphylinidæ and Cicindelidæ, **22**, No. 592, July.—Fenyes, A.—*Lucanus masama* Lec., **4**, August.—Harrington, W. H. En-

tomological recollections (cont.), **37**, July.—Meunier, F. F. Dierckx's "Etude comparée des glandes pygidiennes chez les Carabides et les Dytiscides, avec quelques remarques sur le classement des Carabides," Revue Generale des Sciences, Paris, July 15 '99.—Pic, M.—Description of Coleoptera, Le Naturaliste, Paris, August 15, '99.—Ribbe, C. Short introduction to collecting beetles in tropical countries, **84**, August 31.—Roy, E. Entomological news, **37**, August.—Senna, A. On the species of the genus *Jonthocerus* Lac., Notes from Leyden Museum, xx, 4.

Diptera.—Mik, J. On a hitherto disregarded touch-organ among Diptera, especially in certain Leptidæ and Tabanidæ, **38**.—Rübsaamen, E. H. On the living habits of the Cecidomyidæ, figs, Biologisches Centralblatt, Erlangen, August 15, '99.—Speiser, P. A new species of Hippoboscidæ living on lemurs, fig., **38**.

Lepidoptera.—Berg, C. Observations on Argentine and other South American Lepidoptera [in Spanish], **60 a**, vi, May 6, '99.—Beutenmüller, W. On some species of North American Lepidoptera, Bulletins, American Museum of Natural History, xii, 10, New York, August 10, '99.—Chapman, T. A. On the unity of the Psychidæ, **21**.—Dyar, H. G. A new *Plagodis*,* **4**, Sept.; Life-histories of North American Geometridæ, iv, **5**.—Grote, A. R. In re *Spilosoma congrua* Walk, **4**, Sept.—Hampson, G. F. et al. Nomenclature of Lepidoptera (cont.), **9**, August.—Hanham, A. W. A list of Manitoba moths, iii, **4**, August.—Lyman, H. H. Dimorphism and polymorphism in butterflies, Canadian Record of Science, vii, 1, Montreal, '99.—Poulton, E. B. See the General Subject.—Seurat, L. G. Habits and metamorphoses of a Pierid of the environs of Mexico, **32**, No. 3.—Sharpe, E. M. B. A monograph of the genus *Teracolus*, part v, London, Lovell Reeve & Co., Ltd. 1899. Rec'd August. pp. 45-56, pls. 16-19.—Smith, J. B. Two British American Noctuids,* **4**, August; Some new species of *Hadena*,* **4**, Sept.—Snellen, P. C. T. New Notes on Pyralidæ [in Dutch] 2 pls., Tijdschrift voor Entomologie, xlii, 1-2, The Hague, August 18, '99.—Spengel, J. W. On some aberrations of *Papilio machaon*, figs., 3 pls., **89**.—Standfuss, M. Summary of the experiments hitherto undertaken on temperature and hybridation, **84**, July 27.—Tutt, J. W. Congenital aberration of *Chalcosia venosa* Walk., **21**.

Hymenoptera.—Ashmead, W. H. Classification of the entomophilous wasps, or the superfamily Sphegoidea, Nos. 3, 4, 4, August. Sept.—du Buysson, R. Catalogue of the Hymenoptera of the family Chrysididæ of the Museum of Paris, **32**, No. 4.—Cockerell, T. D. A. Notes on some Hymenoptera, **4**, Sept.—Fowler, C. Some California bees,* **5**.—Kieffer, J. J. Cynipidæ in Species des Hyménoptères d'Europe et d'Algerie fondé par Edmond André et continué sous Ernest André, 66e

fascicule. Paris, Vve Dubosclard. April 1, '99. pp. 369-432, pls. xvi-xviii of vol. vii.—Seurat, L. G. Contributions to the study of the entomophagous Hymenoptera, figs., 5 pls. [Anatomy and larval development] Annales des Sciences Naturelles, Zoologie, x, 1-3. Paris, August, '99; See also Arachnida.—Wickham, H. F. E. Wasmann's "Psychical Powers of Ants," 4, Sept.—Zander, E. Contributions to the morphology of the stinging apparatus of Hymenoptera, Zeitschrift f. Wissenschaftliche Zoologie, 66 Bd., 2 Heft, Leipsic, '99.

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DOINGS OF SOCIETIES.

At the meeting of the Feldman Collecting Social held June 21st at the residence of Mr. H. W. Wenzel, 1523 South Thirteenth street, Philadelphia, atwelve members were present.

The death of Dr. H. G. Griffith, a member, was announced.

Prof. Smith exhibited a hærmaphroditic specimen of *Carneades* sp., received from Washington. The antennæ, wings and thorax show male characteristics on one side of the body, whereas on the opposite side they are female. Both the claspers of the male and ovipositor of the female are present. He further stated that dragon flies had been reported to be very destructive to honey bees in Colorado, being especially partial to queen bees. The present unusual abundance of Odonata was mentioned, especially *Æschna heros*.

Mr. Seiss also remarked on the abundance of this species.

Mr. H. Wenzel recorded the capture of *Siphon robustus* at Atco N. J. It was found abundantly in the larval and pupal state in Sphagnum moss. He also exhibited specimens of *Tmesiphorus costalis*, new to this region, and *Cedius Ziegleri* and *Adranes coccus*, both quite rare, all of which he had taken at Clementon, N. J.

Prof. Smith read a newspaper clipping regarding the occurrence of fire flies in extraordinary abundance. He pointed out that at this early season the fire fly is rather scarce, and stated the article was no doubt greatly exaggerated as is most newspaper entomology.

The following resolution was unanimously adopted:

WHEREAS, death has recently claimed our fellow member, Dr. Horace Greeley Griffith. Be it

Resolved, by the Feldman Collecting Social at its regular meeting held June 21, 1899, that we express our sincere regret and grief at this serious loss. We honored and esteemed our fellow member for his ability as a collector and student, for his social qualities and for his many congenial traits that endeared him to us as a companion and fellow worker. His loss is a serious one to us and to our science, and we tender our sincere condolence to the members of his family whose loss is as great as our own.

Resolved, further that a copy of this minute be sent to the family of the deceased. WILLIAM J. FOX, Secretary.

EXCHANGES

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☞ These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

Identification of Insects [Imagos] for Subscribers.

Specimens will be named under the following conditions: 1st, The number of species to be LIMITED TO TWENTY-FIVE for each sending; 2d, The sender to pay all expenses of transportation and the insects to become the property of the American Entomological Society; 3d, Each specimen must have a number attached so that the identification may be announced accordingly. Exotic species named only by special arrangement with the Editor, who should be consulted before specimens are sent. Send a two-cent stamp with all insects for return of names. PLEASE PUT DATE OF CAPTURE AND EXACT LOCALITY ON EACH SPECIMEN. Before sending insects for identification, read page 41, Vol. III. Address all packages to ENTOMOLOGICAL NEWS, Academy Natural Sciences, Logan Square, Philadelphia, Pa.

ODONATA.—I have fine specimens of *Gomphus graslinelus*, ♂ ♀, which I wish to exchange for Odonata or Lepidoptera.—James Tough 164 Ogden Ave., Chicago, Ill.

LEPIDOPTERA and Coleoptera from Germany for exchange for anything not in my collection.—Send list to William Kayser, Wapakoneta, O.

COLEOPTERA.—Carabidæ and Cicindellidæ of North America wanted in exchange for Carabidæ from Western Pennsylvania.—John Bright, 127 Roup St., Pittsburg, Pa.

LIVE PUPÆ AND COCOONS, FERTILE EGGS, wanted in exchange for European and exotic butterflies, Coleoptera, Hymenoptera, Hemiptera.—A. Voelschow, Schwerin, Meckbg, Germany.

WANTED.—HOMOPTERA from the South and West. Will give New Hampshire Lepidoptera in exchange.—Charles F. Goodhue, Webster, Mer. County, N. H.

WANTED.—To exchange Coleoptera of Northern Texas for those of other portions of the United States. I will collect during this season, for exchange, specimens in all orders represented here.—E. C. Lewis, Forney, Texas.

COLEOPTERA.—I will give 400 species and 1,200 specimens of European Coleoptera in exchange for 50 specimensof *Cychrus*, any species except *Lecontei*.—E. C. Ehrmann, 2314 Sarah Street, Pittsburg, Pa.

HYMENOPTERA.—Wanted, specimens of the common Saw-fly, *Cimbex americana* from any locality. Will give hints as to easy capture, etc., to anyone interested. Named insects of any order given in exchange.- Charles Brues, 320 Hampden Court, Chicago, Ill.

A FAIR PRICE will be given for specimens of *Thecla læta* and *Thecla M. album*. Apply to Entomological News.

WANTED.—Micro lepidoptera of the United States, especially *Tineina*. Living larvæ, especially leaf miners and case bearers desired. Will pay cash or give Coleoptera or Lepidoptera in exchange. W. G. Dietz, M. D., 21 N. Vine St., Hazelton, Pa.

LEPIDOPTERA.—Diurnals, which are as yet not represented, desired from all countries. California and Mexican species given in exchange. Send lists.—E. K. Harvey, 1806 West Eleventh St., Los Angeles, Cal.

I AM willing to collect any order that is required this season to be found in Colorado. Correspondence solicited.—Ernest J. Oslar, 1853 Marion St., Denver, Colorado.

WANTED.—No. 3, of Vol. 6, Insect Life. Exchange or purchase.—J. G. Jack, Jamaica Plain, Mass.

WANTED, in large numbers.—*Luna, Io, promethia, cynthia, polyphemus, imperialis, regalis, ajax, cresphontes* and other chrysalids. Offer *columbia, ceanothi, gloveri, Pap. brevicauda* and *Sphinx modesta*.—Carl Braun, Bangor, Maine.

LEPIDOPTERA.—Exchange and correspondence desired; beginners invited. Especially wish *Lycaenidæ* and *Geometridæ* from all parts of North America, desiring varieties and intergrades; returns in exchange or cash.—John L. Healy, 4139 Bosworth Ave., Chicago, Ill.

COLEOPTERA—I offer unnamed Coleoptera of this locality for named or unnamed species of Coleoptera, Diptera and Hymenoptera of the United States. Correspondence solicited.—G. Chagnon, Box 186, Montreal, Canada.

BOOKS.—I will exchange Vols. 1 to 5 of Entomological News for Comstock's Manual or Holland's Butterfly Book. Will also exchange Vol. 1 Entomologica Americana and Vols. 8 to 29, Can. Entomologist, for standard works on birds.—H. W. Nash, Pueblo, Colorado.

LEPIDOPTERA.—I will take in exchange for exotic and native butterflies live pupæ and cocoons of *ajax*, zolicaon, *cresphontes*, *astylus*, modesta, *opthalmicus*, *vancouverensis*, *kalmiæ*, *chersis*, *regalis*, *ceanothi*, columbia, gloveri and others.—Charles F. Tenim, 48 Ralph St, Brooklyn, New York.

LEPIDOPTERA.—Specimens of *Thecla strigosa* wanted,—Dr. Henry Skinner, 1900 Race St., Philadelphia.

LEPIDOPTERA.—Wanted in papers, American species of *Catocola*, *Arctidæ*, *Sphingidæ* and *Rhopolocera* in exchange for European Lepidoptera. Will collect Coleoptera.—E. M. Dadd, 3 Colina Villas, Green Lanes, Wood Green, London, England, Great Britain.

WANTED.—I am desirous of obtaining a copy of Cramer's Papillons Exotiques des. 3 part, du monde l'Asie l'Afrique, l'Amerique, 4 vol. Any bookseller or other person having a copy to sell can communicate their lowest price to Herman Strecker. Box 311, Reading, Pa., U. S. N. A

FOR EXCHANGE.—800 (eight-hundred) Papilio ajax (Chrysalis), and in papers for Exotic Butterflies, or Foreign Bird Skins or Foreign Coleoptera.—Address, Dr. W. H. Valway, 2671 Broadway, Cleveland, Ohio.

LEPIDOPTERA.—I have a large number of Actias Luna, Citheronia Regates, Eacles Imperialis and Calosamia Angulifera for exchange for exotics.—Prof. Henry Wormsbacher, 122 Hutton street, Jersey City, N. J.

WANTED.—Insect Life, Vol. iii, 11, 12.—Address W. J. Fox, 1900 Race Street. Philadelphia, Pa.

MY collection of insects, comprising fully 8,000 specimens (including duplicates), mostly Coleoptera, to exchange for bird and mammal skins, sets of bird eggs or books and periodicals on "Zoology—particularly "Ornithology."—W. E. Snyder, Beaver Dam, Wis.

ELECTRIC LIGHT MOTHS.—Wanted all species lepidoptera taken at light, in large numbers, especially from West and Southwest United States. Will pay cash or give good exchange in native on exotic specimens.—W. D. Kearfott, 91 Liberty St., New York City.

TRICHOPTERA. Correspondent wanted, United States or Canada.—Dr. F. Ris, Rheinau, Ct. Zurich, Switzerland.

I HAVE pupæ of Sphinx eremitus, perelegans, Darapsa versicolor, Pap ajax, Lepisesia clarkiæ, in exchange for pupæ of Sphinx luscitiosa, gordius, Darapsa chœrilus, Sm. Modesta, Call. angulifera, and other rare ones. -Chas. F. Timm, 48 Ralph St., Brooklyn, N. Y.

PULVINARIA.—Wanted *Pulvinaria* species from all countries, for critical study. —Address Geo. B. King, Lawrence, Mass.

LEPIDOPTERA.—*Sphingidæ*, *Sessiidiæ*, *Arctiidæ* and *Saturndiæ* from all countries; also pupæ and cocoons of *Saturnias* and *Sphinges* desired in exchange for North American or foreign Lepidoptera.—Henry Engel, P. O. Box 369, Pittsburg, Pa., U S. A.

LEPIDOPTERA.—Exchange solicited with collectors in United States and Canada. Pupæ of *Sphinx lucitiosa* also to exchange for desiderata. Send lists.—S. T. Kemp, 637 Jefferson avenue, Elizabeth, N. J.

COLEOPTERA of United States for exchange. Wish to buy or to exchange any any paper on Coleoptera not represented in my library. Send lists to Dr. A. Fenyes, Pasadena, Cal.

LEPIDOPTERA.—Live pupa of *luscitiosa*, *drhpiferarum*, *abbottii*, *inscriptum*, *achemon*, *pandorus*, *myron*, *myops*, *Geminatus*. *amgunntor*, *undulosa*, *imperialis*, *io*, *angulifera* and others. Also good material in papers.—H. J. Erb, 332 East Twelfth street, New York.

COLEOPTERA.—I offer good species of North American beetles in exchange for others not in my collection. Correspondence desired with collectors in good localities. Will identify captures for beginners.—H. F. Wickham, Iowa City, Iowa.

New Publications.

COLEOPTERA—Revision of the species of *Apion* of American north of Mexico, by H. C. Fall (Trans. Am. Ent. Soc. 1898) 4 plates $1.00

LEPIDOPTERA—Synonymical Catalogue of N. Am. *Rhopalocera*, by Henry Skinner, M. D., 1898 . . . . . 1.00

HYMENOPTERA—The species of *Psen* inhabiting America, north of Mex., by Wm. J. Fox, (Trans. Am. Ent. Soc. 1898) .20

———— Monograph of the species of *Aphilanthops* inhabiting Boreal America, by S. N. Dunning (Trans. Am. Ent. Soc., 1898, ...10

———— On some Panurgine and other Bees, by T. D. A. Cockerell (Trans Am. Ent. Soc. 1898) 15

ODONATA—Burmeister's Types of Odonata, by P. P. Calvert, (Trans. Am. Ent Soc 1898,) 1 plate 75

LIST OF LEPIDOPTERA of Boreal America, by Prof J. B. Smith, 1891. pp. 124 listing 6020 species 1.00

LIST OF COLEOPTERA of America North of Mexico, by Samuel Henshaw, 1885 . . . . . 1.25

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CRESSON, (E. T.)—Synopsis of the Families and Genera of the Hymenoptera of Am North of Mex. together with a catalogue of the described species and bibliography. Parts 1 and 2 complete, 1887 . . . . . 3.00

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